
VI.

A Model River Basin Organization

As he left office, President Truman, like Roosevelt before him, was concerned about the lack of coordination in planning, programming, and budgeting for the nation's river basins. On 19 January 1953, his last day in office, Truman sent a message to the House of Representatives soliciting its attention to certain issues, particularly those highlighted by his 1950 Water Resources Policy Commission. Truman suggested legislation to organize more efficient regional river basin planning and management. He implored Congress to increase efforts to ensure that every affected state and community in a region be able to share in the planning and financial responsibilities for basin development.¹

According to two political scientists analyzing basinwide organizational representation in 1954, "the region [has] to be more than a vocal spectator to its fate." They proposed an organization with elected state officials responding to "grass-roots voting power" and having decisionmaking authority from the start of project planning through the operational phase.²

The basin states were not capable in 1954 of assuming a much larger role in resources development. However, they were taking legislative measures to be better prepared to administer water and related land resources. The Council of State Governments reported that each basin state governor as early as 1950 had designated a single agency to review proposed federal projects and to draft the state's comments in accordance with provisions of the 1944 Flood Control Act. By 1954 all basin states had established agencies for water-policy administration and some planning. Federal-state coordination was achieved through various means such as inter-agency committees, informal consultation, memoranda of agreement, and formal conferences.³

The difficulty at the state level was not so much organizational as it was the lack of money and manpower. The basin states were unequal in wealth and varied in terms of enabling legislation related to water management. Funding for state resources programs was usually woefully inadequate. Overall, the problem was too many tasks, too few trained and experienced people, and too little money.⁴

Clifford H. Stone, director of the Colorado Water Conservation Board and a respected representative of the states, explained his view of the

situation in the early 1950s. He told the President's Missouri Basin Survey Commission that section 1 of the 1944 Flood Control Act placed "a real responsibility" on the states. He asserted that had the act "been sufficiently embraced and carried out in some states," much of the federal-nonfederal conflict in the basin "may well have been averted."⁵

Political scientist Albert Lepawsky charged that state officials had failed to seek additional responsibilities or funding. But state officials wanted something other than expanded state planning and programming. They sought a veto over any federal plans they found objectionable.⁶ Their position was substantiated by MBIAC experience. If state officials were concerned primarily with power to negate federal plans, one thesis held that Congress was the only effective elected representation in the basin. As expressed by political scientist Charles Hardin, a joint committee of the basin's congressional delegation and federal agency representatives was a logical group for representing regional interests. He said this group would sponsor a regional program that included responsible financing and that protected the national interests.⁷

Hardin's basin committee was based on a "pure" American federal system. Its members were professional bureaucrats who were responsive to congressional direction and control and also sensitive to states' water laws and policies. Congressmen and agency representatives worked together to ascertain the desires of state, community, and special-interest groups; to determine what was in the national interest; and to recommend how to distribute the financial resources and benefits of the nation to basin projects. Through the regional committee, planning, programming, and budgeting would be achieved in the basin before recommendations were sent to Washington. Then members of Congress from the basin would lobby for the plan.

According to the Hardin model, the regional plan would have grass roots support. Those presenting the plan in Washington would have direct access to appropriate committees. It was a practical, evolutionary scheme and would not disrupt traditional distributive policies.

The academic theorists elucidated and the presidential appointees propounded while those closely associated with the Missouri Basin Inter-Agency Committee sought pragmatic ways to strengthen the organization. While prosecuting the Missouri River development program, MBIAC had succeeded in reconciling diverse and often conflicting views among federal and state representatives, sectional and special interests, and rural and urban groups. By taking advantage of increasing knowledge and information, committee members reformed the organization to meet their professional standards for coordinated planning and programming, and

for eventual operation of the main-stem dam and reservoir system.⁸

Generally, water resources professionals knew each other and worked well together. However, institutional discontent ran deep. State representatives wanted to protect the states' prerogative for water management and formalize their standing in MBIAC or some similar coordinating organization. In 1946, the year project construction began on the Pick-Sloan program, basin states' governors acting through the Missouri River States Committee unanimously passed a resolution requesting that Congress give statutory status to a state-federal committee. Congress took no action on the resolution.⁹

State representatives continued to seek some sort of regional administrative organization emanating from the states. The federal government was viewed as too remote and complex for effective oversight. State and local governments were seen as more accessible and participatory. State and local leaders were credited with better understanding of resources development and operational needs and greater interest in developing positive responses from those affected.

Strong sentiment in favor of decentralization existed in the basin. The need for federal funding of public works projects was juxtaposed with a desire for state control of water management. Emphasis shifted, as construction got under way on the big dams, from the reactive states' rights position of Senator O'Mahoney and his supporters to a more provincial participatory democracy involving state powers and personnel.

Missouri basin home rule sentiment was expressed in 1949 by C. Petrus Peterson, a Nebraska state senator and member of the board of directors of the National Reclamation Association. When addressing the Missouri River States Committee, Peterson referred to "momentous changes" that affected "all our institutions of government" and especially "a distribution of jurisdiction between the states and the federal government." Resources conservation and development were not national problems, he contended, but were local and regional problems. The national government had not found "an appropriate governmen-



*C. Petrus Peterson,
Nebraska State Senator
and President, National
Reclamation Association.*

tal unit to discharge the responsibilities involved." Peterson said that therefore the residents of the basin were responsible for creating a model "with democratic control adequate to the task."¹⁰

Peterson proposed a basin organization designed to recognize their "special interest" and to "preserve democratic control in the hands of the people most vitally concerned." His organization would "maintain the integrity" of state statutes, especially property rights in water, while allowing the federal government to participate in selecting and managing projects, which the investment of federal funds made essential. The organization would be "established on the basis of area home rule," which would offset "needless centralization of power in the federal government."

Peterson cited the precedent "for such instrumentalities" as he proposed. He pointed out that the Constitution permits states to enter into compacts in order to deal with interstate matters on a cooperative basis. Furthermore, Congress is impelled to consent to compacts dealing with regional matters to protect the national interest, especially in matters relating to interstate streams.

Before 1920, only 36 compacts had been ratified by the states and Congress.¹¹ And not until the 1922 signing of the Colorado River compact was an interstate compact used for basinwide water management. Few compacts were executed thereafter. A public-works legislative specialist reported in 1954 that only 19 compacts still existed.¹²

The substantive issues related to compacts are difficult to resolve. The search for ways for the states and the federal government to coordinate and administer regional affairs is often unsuccessful. Frequently, compacting results in a "state gesture along the lines of self-protection rather than toward responsible and constructive achievement to eradicate the problems that created the need." Compacts are intended to create positive, constructive solutions to issues involving other states and the federal government, not to provide complexities.¹³

Advocates have contended that interstate compacts provide "a mechanism for the weighing of state and national interests." The logic of this position was that "Some interstate streams were proper subjects for integrated development." States alone could accept responsibility for modest-sized projects. Large-scale projects, where both the nation and states had interests, could be built through negotiated, shared financing. A compact agency, drawing its membership from both the federal and basin state governments "could insure the adequate presentation of these interests."¹⁴

Clifford Stone, a highly respected professional in Missouri basin

water resources matters and author of the Colorado River compact of 1922, shared his views on interstate compacts with MBIAC members. Stone believed that the compact method provided "a means for appropriate federal and state participation in river basin development and for legal adjustment of pertinent interstate water problems." He foresaw that where basinwide plans had been implemented, interstate conflicts and questions of project operations might be appropriately settled by compact. Stone urged that "the highest use of water, in accord with the rights and interests of the states, and of the federal government, as well as with the principles of our federal union of states, may be accomplished in this way."¹⁵

MRD Division Engineer, Brigadier General Samuel D. Sturgis, Jr., argued against decentralization. At MBIAC's January 1950 meeting, Sturgis reported that the Corps of Engineers and Bureau of Reclamation, working with the states through the inter-agency arrangement, could handle the operational phase of the basin program.¹⁶ He told General Pick, then Chief of Engineers, that project operation had received considerable attention. Sturgis said that starting with Glenn Sloan's proposal of central operational control, others had suggested more state control. But Sturgis added that "The Bureau, at field level at least, agrees that each agency should operate its own projects, cooperating with other agencies and states."¹⁷



Brig. Gen. Samuel D. Sturgis, Jr.

Sturgis told Pick that his speech to MBIAC was intended to counter Petrus Peterson's "home rule" address. He stressed that it was "entirely feasible, without running into any adverse legal problems, for the federal agencies to continue to cooperate with the states and operate to everybody's satisfaction the completed projects." Sturgis cautioned that the Corps was confronting a "belief (in the absence of a true understanding of the problem)" that something other than the inter-agency committee was necessary in the operational phase.¹⁸

In the discussion following Sturgis's speech, Governor Val Peterson announced that, as chairman of the Missouri River States Committee, he had taken action on Petrus Peterson's home rule proposal. The Council of State Governments had been requested to make a study and recommend

guide-lines to the MRSC for operation of the basin's water resources facilities.¹⁹

Val Peterson said he preferred the federal agency management model, but the states ought to be ready with their own alternative should a Missouri Valley Authority be proposed. Governor Fred G. Aandahl of North Dakota said an interstate management model was necessary not as a negative reaction to a regional authority plan, but as a positive guide for state action.²⁰ He and Stone both testified before Truman's Policy Commission in support of the federal agency model and advocated a compact approach for dealing with water resources management issues in the Missouri basin.

Planning for a draft interstate compact proceeded in 1950 through the auspices of the Missouri River States Committee and the Council of State Governments. In February, Governor Peterson presented the issues to the Council of State Governments and follow-up meetings were held with council representatives and some basin state governors. By the end of the year, the council had identified "a multitude of potent factors" requiring "sober analysis." It forecast that as the basin's agricultural and industrial production grew, operational problems related to the Pick-Sloan projects would become harder to resolve and "the required administrative decisions increasingly difficult to make." The council noted that the direction and shape of the basin's future economic development would be influenced heavily by how the federal agencies exercised administrative discretion.²¹

The governors urged the council to proceed with the study and to prepare appropriate documents for a Missouri basin compact.²² Drafting and redrafting of the compact report continued for several months. It was an arduous task, fraught with contention within the MRSC. The council added James M. Landis (dean of the Harvard Law School); Phil M. Donnelley (a former governor of Missouri); and Clifford Stone, Frederick L. Zimmermann, and Mitchell Wendell (interstate compact specialists), to the compact drafting team.²³

Some MRSC members expressed concern about pressing for a basin compact at that time. Strong support existed for continuing with the existing inter-agency management. A portent of future resistance to a compact was revealed when the MRSC objected to a motion to "accept the report" of the Council of State Governments. An amended motion "to receive the report" finally passed. Major concerns were reconciling MRSC members' views of centralized versus decentralized control, and dealing with diverse interests in applying the complex criteria for water resources management.²⁴

Division Engineers in the Missouri River Division expressed their views on compact deliberations during 1952. One told the Chief of Engineers he thought the deliberations favored an MVA because of the difficulty in imposing "any other form of administration in the Missouri basin" so long as the states were engaged in the compact study.²⁵ His immediate successor said the states could accomplish more through the MRSC and MBIAC than if they bound "themselves to an administrative combination with legal, enforceable provisions."²⁶

The states opted to continue considering the compact alternative. According to an MRSC consensus reached in December 1953, the chairman was to contact basin state legislatures, Congress, and the White House to pursue the subject.²⁷ In the summer of 1954, MRSC members appeared before the Senate Committee on Interior and Insular Affairs, chaired by Senator Hugh Butler of Nebraska. The committee was considering a bill requesting that Congress arrange for compact negotiations. A companion House Resolution was introduced by William Henry Harrison of Wyoming.²⁸

Senator Butler asked the American Law Division of the Legislative Reference Service of the Library of Congress to draft a brief of the legal problems related to the Missouri River basin compact. Butler sought to protect the rights of states to determine the use, control, and administration of water resources. He did not want states in the basin to surrender any powers they possessed.²⁹

The Law Division responded that the draft compact did not meet the standards Butler had stated as requisite to "a proper compact arrangement." The compact was intended to secure effective coordination, cooperation, unified planning, development, and operation of the water resources of the basin. Because control was placed in the federal government, basic adjudications would be by federal rather than state courts. The Law Division concluded: "This may be what Congress and the core states want. If so, they should know what they are getting."³⁰

The proposed compact would superimpose upon existing federal and state agencies a new agency: the Missouri Basin Commission. The com-



Senator Hugh Butler of Nebraska.

mission would be authorized to make integrated plans for the conservation, development, and use of the basin's water resources. Member governments would be required to submit to the commission all plans for projects for flood control, irrigation, or other use or management that might substantially affect interstate use of water. The commission would review and appraise member governments' plans and submit its findings to those governments. The findings would be binding on the member governments.

The process of exploring these policy issues was delayed by Senator Butler's death. In early August 1954, the Senate committee reported back favorably on the compact legislation. On the Senate floor, Francis Case of South Dakota and Frank A. Barrett of Wyoming spoke in favor of the bill, declaring that the ten basin states had unanimously endorsed the bill and that the Bureau of the Budget and interested federal departments had approved it.³¹ A House Subcommittee on Irrigation and Reclamation considered companion consent bills for the compact on 4 March 1954, but took no action. The legislative proposal was held over.³²

Opponents of the compact took advantage of the interim. On 7 September 1955, D.P. Fabrick of the Montana State Water Commission recommended that the MRSC give no further support to any legislation that might lead to a Missouri River compact. Fabrick said that while he agreed with conceptual provisions of the basin compact, he feared "methods of compact legislation involving lengthy and inexpedient methods of negotiation . . . and impractical provisions of amendment or repeal." He criticized the compact as unsuitable for resolving basin resources management issues.³³



*D.P. Fabrick,
Montana State Water Commission.*

Fabric proposed legal recognition of the MRSC as an alternative. A bill to establish a Missouri River states office in the executive branch — as an independent agency to be used as executive agent for the MRSC — did not get out of committee.³⁴ Fabrick believed the "Governors Committee" [MRSC] was "the only representative group of sufficient prestige" to be effective within the administration and Congress.³⁵

Fabrick's anti-compact presentation was followed by several statements of assent from MRSC members. Robert Hipple of South Dakota said he believed the compact lacked popular support, without which it would not be successful. Governor Joe Foss of South Dakota moved that the MRSC withhold action on a Missouri River compact. Foss's motion carried unanimously. The pursuit of congressional legislation authorizing the MRSC ceased.³⁶

The Missouri River States Committee's deliberations reinforced what many advocates of organizational reform for administration of water resources felt was needed: a reordering of federal-state relations. What was lacking in the early 1950s was adequate provision for federal and state collaboration, and sharing of responsibilities for determining specific objectives and for managing multi-purpose projects. The Commission on Organization of the Executive Branch of the Government reported in 1955 that the existing inter-agency organizations were "wholly incapable of providing the degree of coordination needed to protect the public interest."³⁷ Federal and nonfederal government entities needed an organizational model that would promote a coherent, financially prudent, and administratively effective water and related land resources program.

The MBIAC members envisioned a strengthened committee. The MRD Division Engineer, Brigadier General William E. Potter, took the lead in encouraging the committee to accept a larger role. He recommended a program committee that would create a permanent staff and that would, in effect, be an executive agent for MBIAC. Potter promoted the concept of an integrated budget for the basin, by which he meant "strong state participation in its formation."³⁸

MBIAC accepted Potter's challenging proposal.³⁹ It established a standing program committee and committed considerable effort toward developing acceptable procedures for local, state, and federal coordinated planning and programming. Aside from providing program continuity, the program committee focused on problems and issues for MBIAC's attention. It prepared special reports, developed agendas for meetings, and reinforced procedures for coordinated and integrated water resources activities in the basin. It served for five years as the working staff of MBIAC.

MBIAC members continued to analyze their basin organization and make internal changes. At an August 1959 meeting, MRD Division Engineer, Major General Keith R. Barney, presented a paper on "future activities." He noted the committee's enhanced role that included coordinating plans for comprehensive projects, programming developments on an equitable and logical basis, and operating completed projects to ensure

optimum benefits. To achieve these objectives, Barney believed that MBIAC needed to change by determining the roles of the individual members and clarifying their dual responsibilities to their states or agencies and MBIAC.⁴⁰

General Barney offered suggestions to strengthen committee activities. He called for "specific means" to coordinate issues confronting MBIAC. He suggested that the committee take more aggressive and earlier action in dealing with problems. He said that programs for investigations could be accelerated and better coordinated, and the governors' participation in committee activities could be increased. He also thought the program committee could meet more often, and its staffing could be strengthened. He recommended that a subcommittee be appointed to review the charter and propose changes to enhance the committee's effectiveness.

The membership acted on Barney's reform suggestions. It appointed an ad hoc subcommittee, with three federal and three state members, which reported in May 1960. The group thought the 17-member program committee was "too burdensome." The main problem was the basin's size: travel, time, and costs hindered committee members from completing their work. Decreasing its membership would facilitate the work of the program committee. This organizational and procedural ad hoc subcommittee recommended that most of MBIAC's work be done by ad hoc subcommittees with specific assignments.⁴¹

The organizational subcommittee examined the roles of the governors as members of MBIAC. Except for the provision that the chairman "shall be selected from and by the federal representatives," the MBIAC charter accorded governors equal status with federal representatives. Though governors had shown no interest in eligibility either for the chairmanship or for participation in selecting the chairman, the MBIAC task group wanted to resolve the matter. They reported that having a governor as chairman "could stimulate increased participation of governors in activities of the MBIAC." On the other hand, the task group thought it "unlikely a governor would be willing to commit his personal time to the extent required to carry out the responsibilities of the chairman."⁴²

The ad hoc group considered the participation of the governors in selecting a nongovernor chairman. This charter revision would place governors on a more equal basis with federal members. The subcommittee recommended that the decision as to whether governors became eligible to serve as chairman and to participate in selecting the chairman should be made by the governors themselves.⁴³

The MRSC members discussed more extensive participation in MBIAC management by the governors. Iowa Governor Herschel C. Loveless stated his belief that governors had a great many duties; brief tenures; and backgrounds, experience, and interests that were not commensurate with those of regional heads of federal agencies. Joseph W. Grimes of South Dakota asked the MRSC members to recall that MBIAC was "a child" of the Washington-based inter-agency committee and therefore a governor serving as chairman might feel obligated to follow federal dictums. The prevailing view was that governors should not serve as chairmen of MBIAC, but no vote was taken on the matter and it was tabled.⁴⁴

The MRSC and MBIAC members were clearly assessing ways to increase their efficiency and effectiveness. They were amenable to establishing ways and means for MBIAC to function more effectively with substantial state participation. They believed that constructive leadership was vested where it mattered most — at the regional and field levels, where people interacted, focused on common perceptions of problems, and cooperated on a positive course of action.

Those who were most involved in managing the basin's water resources held views similar to those in the executive and legislative branches of government. The staff director of the Senate Select Committee on National Water Resources told MBIAC in April 1960 that "more state and local participation in water resources planning" was needed.⁴⁵ He emphasized that increased participation was especially important with respect to "end-use projects, commensurate with the increased attention given by the federal agencies to river regulation and control." The Senate committee envisioned a broadened water policy to address the needs of urban America for municipal and industrial supplies, water quality, flood plain management, recreation, and greater efficiency in water use.⁴⁶

President-elect John F. Kennedy also pushed for change in water policy. His electoral campaign Natural Resources Advisory Committee recommended that the "new resource challenges of urbanism be met by closely coordinated federal-state efforts."⁴⁷ After his election, President Kennedy pressed Congress to act, and the cooperation between the executive and legislative branches resulted in a new policy statement requiring that regional, state, and local objectives be considered and evaluated within a framework of national objectives.⁴⁸ Kennedy established a Water Resources Council (WRC) in the executive office to support the policy objectives.⁴⁹

Despite assurances from the executive office that the WRC would not expand federal jurisdiction and control over the water resources of the states, nonfederal officials were concerned that their powers might be

diminished. State officials wanted recognition of state water laws and safeguards to allow them to manage their water resources.⁵⁰ The most objectionable features of the proposed legislation related to creation of basin commissions. According to some state officials, basin commissions should not be created unless both the federal and affected state governments concurred that they were needed. Some states in the Missouri basin were satisfied with the informal status of existing inter-agency committees.⁵¹

Differences between inter-agency committees and basin commissions were few but significant. Like inter-agency committees, commissions would serve as the principal organizational entities for the coordination of federal, state, and local representatives. Unlike inter-agency committees, commissions would have permanent chairmen, staffs, and greater responsibilities for formulating comprehensive, integrated basin plans. Some states held that basin commissions should not be created unless both the federal and affected state governments concurred that they were needed.⁵²

Through the Council of State Governments, the states presented to Congress proposals for new relationships between the federal and state governments. Missouri basin state officials especially favored this partnership.⁵³ Following years of negotiations among the states and the legislative and executive branches of the federal government, the Water Resources Planning Act was finally passed on 22 July 1965.⁵⁴ The several water policies and programs of the federal agencies and state governments were to be coordinated in a more comprehensive manner than had occurred in the past. States were granted coequal status with federal agencies in the functioning of river basin commissions.

The framers of the 1965 legislation recognized that meaningful planning required consensus. Achieving consensus in turn required persuasive and tactful interchange. The act directed the presidentially appointed commission chairman to coordinate federal members and "to represent the federal government in federal-state relations on each commission." State representation was through the vice chairman, elected annually from among the state members. In the absence of consensus, the chairman was required to set forth the views of the federal members and the vice chairman those of the states. Neither the federal government nor the states could compel the other to act; they enjoyed coequal status.

The planning act assigned the river basin commissions four basic responsibilities. The commissions were to serve as the principal water planning agencies in their designated watershed regions. Each commission was to prepare a comprehensive coordinated joint plan (CCJP) for

the region. Each commission also was to develop a list of priorities for water resources planning and construction projects, both state and federal, and advise the governors and WRC. The commissions also had authority to conduct investigations and studies as necessary.

The WRC, made a statutory council in Title I of the act, was to coordinate all federal water resources planning and to review comprehensive inter-agency, inter-governmental river basin plans.⁵⁵ The President placed the field committees under the WRC. Pending establishment of a Missouri River basin commission, the WRC assigned MBIAC the task of completing a comprehensive basinwide study. Charles A. Cocks, chief of the Planning Division for the Missouri River Division, directed the study.⁵⁶

While the federal and state participants prepared the basin study, the MRSC took up the issue of a basin commission. An informal poll was taken following a proposal at an April 1966 meeting that the governors request creation of a commission. Half the states opted to defer action and half favored a commission. North Dakota Governor William L. Guy's motion decided the issue, deferring action pending further study. The states were to reconsider and take up the matter again by 31 December 1966. No such formal meeting was held.⁵⁷

South Dakota Chief Engineer Joseph Grimes wrote a revealing memorandum to Governor Nels Boe of South Dakota on 28 April 1966.⁵⁸ Grimes asserted that the "tremendous effectiveness" of MBIAC during the early years of basin development under the 1944 authorization had "degenerated into a routine, stereotyped, rut-like, discussion of nonessentials." Grimes marked MBIAC's decline from the time construction of main-stem dams, power systems, and navigation facilities was assured. He believed that the ineffectiveness of the inter-agency committee was inherent in "all voluntary organizations." Grimes contended that because the special interests had realized their objectives, the committee's function as a unified and effective body had diminished.

New constituencies, more narrowly focused than the broad coalition that brought about the enabling legislation for Missouri basin development, were attempting to reshape the law. Replacing the voluntary MBIAC with a statutory commission, some believed, would revitalize the basinwide constituency network and stimulate the states' interest. The number of competing policies and individual agencies could be cut, efficiency improved, and nonfederal interests empowered through a basin commission.

In January 1967, the WRC appointed a special task force to study institutional arrangements for river basin management. The task force

was unable to recommend a single most suitable institution. The task force did state that in some circumstances, federal-state compacts might be best suited for managing a comprehensive plan and program such as that under way in the Missouri basin.⁵⁹

At the MBIAC meeting in June 1969, members expressed concern about the type of Missouri basin organization being considered in Washington.⁶⁰ They were unable to reach a consensus regarding a basin commission. Some members were unhappy with the performance of existing commissions; others wanted to end the inter-agency arrangement because they held states had inadequate powers. Other members restated their hope for a more formal arrangement within MBIAC.

A decision as to whether to form a commission was the prerogative of the states. In 1971, they finally reached a consensus. North Dakota Governor Guy called a special meeting in September at the National Governors Conference in San Juan, Puerto Rico. The governors were informed by the WRC executive director that seven basin states (Colorado, Minnesota, Missouri, Montana, Nebraska, North Dakota, and South Dakota) had indicated "solid support" for the commission. Two states (Iowa and Wyoming) had questions but indicated they would participate if a commission were established. Kansas was not opposed but required state legislation to become a member.⁶¹



On 15 October 1971, the WRC approved a resolution establishing a Missouri River Basin Commission (MRBC). A draft executive order was required to be cleared through the Office of Management and Budget. By 8 December 1971, nine of the ten basin states had commented on the draft

executive order and in March 1972 the President created the Missouri River Basin Commission.⁶² Transfer from MBIAC to the MRBC was completed formally at a joint meeting on 14 June 1972.⁶³

Planning studies dominated the MRBC agenda. These were essentially assessments, termed Level B studies, of areas smaller than the watershed region, or updates and expansions of the completed comprehensive coordinated joint plan that MBIAC had drawn up just prior to its demise. Most of these studies focused on sub-basins, which often were within a single state. State leadership directed the MRBC planning-oriented staff to conduct studies, and much of the region's planning responsibility shifted from federal agencies to the commission.

In 1977, the Missouri basin governors lobbied for development of a computerized hydrology study to monitor and determine water availability within the basin.⁶⁴ MRBC members intended to establish a methodology and data base for use by all water resources management agencies. The hydrology model, set up in 1979, produced a computerized water use-monitoring and accounting system.⁶⁵

Collection and analysis of basic data were nonthreatening to individual members. Basin states derived substantial benefits from the neutral arena in which studies were coordinated. States took advantage of federal funding, expanded their data bases, and received assistance with assessments of water resources and developments at sub-basin level. The MRBC's planning activity was of less value to federal agencies because it did not comport with their mandated planning practices and budget requests to OMB. However, considerable value accrued to both federal and state professionals who were collaborating to advance the well being of the region.

The commission was a fact-finding and coordinating body for the basin and had no regulatory powers or binding authority. The Water Resources Planning Act of 1965 stipulated that existing laws and authorities were neither expanded nor diminished. Because the act required consensus, the members negotiated conflicts or deferred action on divisive issues. The MRBC reported that a majority vote by the federal and state membership was required for commission action if consensus could not be achieved. The consensus rule was intended to support coequality and facilitate negotiation of differences without centralizing authority. Although constraining, the consensus rule was necessary because centralizing authority within the MRBC would have compromised the sovereignty of the states and the responsibility of federal agencies.

Generally, the MRBC performed an informal "mediation" role in resolving water issues. At WRC request, the commission also had the

formal role of providing a forum for airing disputes and studying alternative solutions. Operating within the constraints of its statutory authority, the commission adopted a proactive approach that included planning, research, dissemination of information, and consensus building to address management issues before they became critical problems. Without such an organization, the vast Missouri basin would be an institutional morass because of governmental activities extending across political subdivisions and involving divided powers and fragmented policies.

Yet there was no hue and cry from the basin residents when President Ronald Reagan issued an executive order in 1981 terminating programs established under the Water Resources Planning Act of 1965: the federal coordinating council (the WRC), the state planning grants, and the regional basin commissions.⁶⁶ Incentives for participation in the federal-state organization had been tenuous. The MRBC was limited to planning and, from the commission's inception, Congress had been reluctant to fund planning for additional projects. Furthermore, escalating costs and tighter budget reviews threatened the project's feasibility.

The timing for the commission's beginning was unfortunate in other respects. As it began functioning, "attractive" and "necessary" Missouri basin projects were essentially completed, some projects were infeasible, and many of the emerging issues centered on operational aspects of the big dams and reservoirs that were beyond the purview of the MRBC. The commission also was created just as the Environmental Protection Agency was launched with its host of water quality regulatory functions, while the MRBC's mandate did not account for the emerging significance of environmental concerns.

Basin state leaders understood that the federal function was shifting to an expanded regulatory role and away from that of capital supplier for project planning and development. The institutional history of the basin shows that states consistently favored the additional government involvement necessary to obtain the federal development program. The common objective of state members was protection and advancement of state prerogatives. By 1981, the states had derived the maximum benefit from the MRBC, so they were indifferent to its continuation.

When arrangements were made with the Reagan administration to transfer the residue of MRBC funds to a successor organization, the basin state governors moved quickly to establish a states' association. The Missouri Basin States Association (MBSA) was incorporated in September 1981 as a nonprofit corporation. It subsequently received more than \$1 million in operating money, carryover funding for two studies, and other assets from the MRBC.⁶⁷

The states were ready to quit comprehensive regional planning, the impetus for which had come from the federal government. MBIAC's "framework" documents were sufficient for that purpose. The states wanted a basinwide organization to facilitate coordination of regional concerns and to address specific interstate water resources problems. They broadened their objectives in May 1982 to include "matters of interstate comity" and focus on conflict resolution as a function of the association.⁶⁸

The states gave MBSA greater freedom of action than that afforded the MRBC. The bylaws specified "no members," but in reality states were dues-paying members and issues were decided by simple majority vote by representatives of each of the ten basin states. Federal "observers" attended association meetings.⁶⁹

A board of directors defined the association's activities and managed its affairs. Initially, each of the ten basin states was represented by two persons nominated by their governor and then elected to the board by the association's directors. In 1987, the board of directors revised its bylaws and articles of incorporation to allow each state one director appointed by the governor, that person to be a senior water resources official. This was an attempt to strengthen MBSA through participation at board meetings by higher ranking decisionmakers.⁷⁰

MBSA functioned by committee. The presiding officer had no authority except for the personal influence he might exert. Individual directors, serving at the pleasure of the appointing governor, were unequal in their authority to speak for the governor, and the director's influence could be handicapped or enhanced by the executive relationship. MBSA was essentially comprised of equal partners, each of whom sought to protect the state's interest in water.

The association accomplished a great deal in a relatively short time under this confederacy model. It was more innovative than predecessor organizations, despite the states' being constrained in formulating interstate policy that might interfere with federal authorities. MBSA served as an effective forum through which the ten basin states could identify, discuss, and resolve issues of common concern.

In 1982 the board of directors initiated a process to secure formal cooperation of state governments regarding use of Missouri River water. It appointed an ad hoc committee to explore the concept of a usage threshold that would aid in conflict resolution. The ad hoc committee reported to the board in May 1984, and its recommendations were tabled for further consideration. Both upper basin states and Colorado opposed the report (the latter because of recommended action that Colorado law

prevented the governor from taking).⁷¹

The association appointed a standing committee with a broadened assignment. It created the Water Resources Coordination Process with the charge to develop a negotiating procedure to be applied when the states disagreed over interstate waters. The directors retained a professional mediator and adopted a five-step process consisting of issue identification and analysis, guidelines for and conduct of negotiations, and implementation.⁷²

The board asked the MBSA staff to analyze the Pick-Sloan Missouri basin program in order to provide coordinating support. The analysis would provide background information and help identify interstate issues that the states could address in conflict resolution. This approach was especially valuable because it concentrated on state concerns related to Pick-Sloan plan operational issues.

The board directed the staff to prepare the work plan for analysis of Pick-Sloan with the objective of accurately describing the program and its impact on the basin states.⁷³ Program components were to be assessed functionally in interim reports for the directors' review and comments. Upon receipt of each functional interim report, the association's executive director issued a memorandum identifying potential interstate water issues raised by the functional analysis and recommended MBSA board action.

MBSA had great difficulty achieving consensus among the states on the staff functional reports. In fact, the subject of municipal and industrial water supply was so controversial that the board decided not to release the report. The common objective of state representatives was protection and advancement of state prerogatives, but the integrative processes MBSA followed resulted in a cognitive development that clarified basin water management issues.

MBSA also led an effort to resolve the over-arching issue of each state's rights to withdraw water from the Missouri River main stem. When South Dakota threatened to sue for the right to market water, MBSA offered to negotiate the apportionment of Missouri River water.⁷⁴ If South Dakota had sought apportionment through court decree, all of the Missouri basin states could have been involved in extended litigation. (This type of litigation usually results in court appointment of a special master who recommends an apportionment that is backed by court decree.)

An interstate compact was an alternative to court-ordered apportionment. Kansas Governor John Carlin invited Missouri basin governors to appoint representatives to a negotiating team coordinated by MBSA to

pursue such an alternative.⁷⁵ He proposed a compact that would be limited to designating only a portion of Missouri River flows for the use of each state.

The governors agreed to negotiations during 1986. They set December as the deadline because it marked the end of the terms of five of the basin's governors. At the first substantive meeting in April, the North Dakota representative opposed an interstate compact. The state representatives agreed that allocation of water among the states was the main issue, but that the purpose, policies, and principles concerned with use and management of water first had to be outlined and agreed to.⁷⁶

At follow-on meetings, the governors' representatives sought solutions to specific problems with the intent of addressing the instrument or mechanism for implementing solutions. The deliberations led to a draft "statement of principles" that had allowed each state to use its water resources independently but in harmony with the other basin states.⁷⁷

The state representatives could not reach accord on the final principles. Areas of disagreement centered on out-of-basin water transfers and establishment of quantities of "reasonable" water use within each state. Some states already had enunciated positions on issues that contradicted the principles. Until those barriers were overcome, the full set of principles and implementing actions could not be agreed on.

Although failing to achieve the ultimate goal, the negotiations produced some benefits. The governors' representatives communicated among themselves the positions of the basin states on water resources issues and management concepts. They addressed a broad array of concerns and fostered a better understanding of water resources issues among basin states. The MBSA staff reports produced significant understanding of the Pick-Sloan plan and of each basin state's position on issues and principles. The basin was in a strengthened position to explore a management model.

The brief 1986 negotiating period became even more of a problem when the negotiators broadened the scope of issues to be addressed. Furthermore, representatives had rejected the idea of having a facilitator to help define the interests of each state and to seek negotiated solutions. Animosity developed between some negotiators, and those seeking specific water allocations were frustrated when they realized an agreement would not be achieved within the allotted time frame. In December 1986, the governors' representatives disbanded, or, as one participant described it, they "self-destructed."

The governors' representatives did recommend pursuing an interstate agreement on water management for the basin. The board of directors

acknowledged that because of the polarization created by lawsuits, MBSA could make no further progress until the litigation was concluded.⁷⁸ The association's role was diminished more by external factors than by its own initiatives for interstate reconciliation.

At this same time, some of the states were unwilling to financially support MBSA. The association's carryover funds from the basin commission were virtually depleted, even with the staff reduced to an executive director, two professionals, and an administrative secretary. On 26 August 1987, the board of directors voted to release the staff and close its Omaha office, effective April 1988.⁷⁹

The Missouri basin was left with an institutional morass. Although MBSA existed, it had no administrator or office from which to coordinate the vast basin's water-management activities. In July 1990 the board decided to hire an executive director and to examine ways to strengthen the nonfederal basinwide institutional base. The association expanded its board to better represent the basin's Indian population. MBSA's board reinitiated regular meetings to evaluate and make recommendations on proposed federal policies affecting the Missouri basin, to formulate consensus positions for recommendations to the Corps of Engineers on operating plans, and to review technical information on the Corps' master water control manual.⁸⁰

During 1990 MBSA began the difficult task of exploring alternative institutional arrangements for the Missouri River basin. Regional consciousness had evolved into disputes over the availability of Missouri River water to serve various private- and public-sector special interests that had formed contentious sub-regional blocks.

The institutional dilemma was exacerbated by the basin states' vastly different physical, legal, and economic relationships to the Pick-Sloan program and their unequal proximities to the main-stem river. Of the ten states bordering the Missouri basin, three do not touch the mainstem river at all (Colorado, Wyoming, and Minnesota), two provide 80 percent of the storage available to the main-stem system (Montana and Wyoming), and three contain the vast majority of Pick-Sloan storage (Montana, North Dakota, and South Dakota).

Forty-five years following the Pick-Sloan legislation, each state's perceptions as to benefits — actual or unrealized varied widely. These differences have mitigated stress against any basinwide organization's success in achieving consensus on water management issues.

The Corps' six main stem projects overshadow basin water management issues. But the attention each state gives to the main stem is determined by its location relative to the projects; South Dakota with four

of the projects has been most active in this regard. State water officials, however, probably devote much less time to Missouri River issues than to other water management concerns. Most concerns are more localized and the federal presence is less dominant in areas far from the main-stem.

MISSOURI RIVER BASIN AREA AND PERCENT OF STATES IN BASIN

<u>State</u>	<u>Total Area (Square Miles)</u>	<u>Percent in Basin</u>
Colorado	104,247	29
Iowa	56,290	30
Kansas	82,276	50
Minnesota	84,068	2
Missouri.....	69,674	52
Montana	147,138	82
Nebraska	77,227	100
North Dakota	70,665	59
South Dakota	77,047	97
Wyoming	97,914	75



Crane by Sallie Zydek.

VII.

System Operation

During the more than four decades of institutional change associated with the Pick-Sloan Missouri basin plan, the affected states and Indian tribes were frustrated by their lack of control over water-management issues. Section 1 of the 1944 Flood Control Act recognized rights and interests of states in water resources development, and required federal agencies to consult and coordinate with the states. In certain instances involving proposed developments, such as the Osage basin projects in Missouri, that legal requirement satisfied state demands and resulted in altered plans.¹ However, Indian rights regarding water management were not clarified nor considered in operational plans.² In other sections of the 1944 act, federal agency power dominated. Sections 6, 7, and 8 authorized the Corps of Engineers through the Secretary of the Army to prescribe operating regulations for use of storage allocated for flood control or navigation, to dispose of stored water not needed for authorized purposes, and to provide water for irrigation.³ Despite this clear authority, operating principles for mainstem projects became controversial.

The Corps of Engineers and the Bureau of Reclamation discussed principles of operation for multiple purpose reservoirs early in the basin development program. Representatives of the two agencies met in Omaha in May 1949 and in Denver the following November to reach an agreement. It dictated that whichever agency constructed and maintained the dam would be primarily responsible for its functional operation for purposes other than irrigation and flood control. The agreement also stated that separate offices for scheduling storage and releases at reservoirs having both flood control and irrigation purposes would not be necessary. Methods of forecasting and agreements on details of operation were to be worked out for each reservoir.⁴

William Glenn Sloan of the Bureau of Reclamation reported on the agencies' preliminary discussions to the Missouri Basin Inter-Agency Committee at its meeting in September 1949.⁵ Sloan, who was then chairman of MBIAC, suggested central operations control for all federal reservoirs in the basin. He raised some fundamental questions. The time had come for open and objective discussion.

Brigadier General Samuel D. Sturgis, Jr., MRD Division Engineer,

recorded in his notes that Sloan's suggestion could be "lethal in effect." He elaborated that MRD had been working out dam and reservoir control "by cooperation with the Bureau on the technical level."⁶ Sturgis intended to oppose Sloan's initiative.

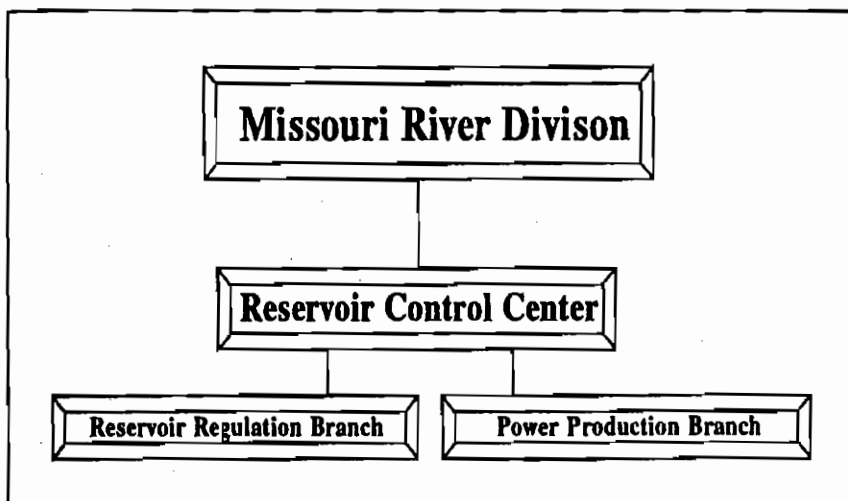
The Corps was pressed by some state officials who supported Sloan's proposal. At a 30 November 1949 meeting of the Missouri River States Committee, Nebraska State Senator C.P. Peterson proffered that when the operational stage was reached, "some morning a decision" would have to be made whether to release water in support of navigation or hold it to sustain irrigation.⁷ He said that would not be the time for an inter-agency debate. Governors William Bonner of Montana and Forrest Smith of Missouri stressed the importance of involving the states. Nebraska Governor Val Peterson, in his capacity as chairman of the MRSC, requested that the Council of State Governments study operational phases of the Missouri River development program and submit recommendations.⁸

Corps leaders acted without waiting for the council's report. General Sturgis got on the agenda of the January 1950 MBIAC meeting to pursue the Corps' objectives to control reservoir operations. He explained some of the factors affecting plans for the operational phase and emphasized the need to collaborate with the states. Sturgis said problems could be solved "only through mutual and cooperative efforts, through give and take, through efficient operations, not by new organization charts."⁹

The Corps clearly intended to fulfill its legally mandated assignment and take the lead to control operations of the main-stem dams and reservoirs. It was amenable, however, to sharing water management on tributary streams west of the main stem. Meetings with the Bureau of Reclamation between 5 June 1951 and 15 February 1952 affirmed the Corps' position.¹⁰

The Corps and Reclamation Work Group on Coordination of Interests considered in detail the problems and basic requirements of operation of the main-stem dams and reservoirs for each individual function. It evaluated the system's capacities under historic extremes of drought and high-water runoff conditions. The work group examined items of mutual interest or potential conflict between the various functions to be served in multiple-purpose operations.

The work group reported in 1952. It concluded that on main-stem and some tributary projects, navigation and flood control operations related directly to irrigation and hydropower. Other multiple-purpose features that were to be served by the stored water had "practically no operating interrelation."¹¹



The Corps would ascertain when water was to be released from the main-stem system to meet requirements. The work group affirmed that MRD's Reservoir Control Center (RCC) would coordinate the acquisition and analysis of all hydrologic data required by the Corps in the operation of the dams and reservoirs. The RCC also would study power production potentialities, prepare storage balance relationships among reservoirs, and make other studies for the purpose of developing multiple-purpose operations favorable for power.

MRD wanted some institutional arrangement whereby technical representatives of other federal agencies and the states could express their viewpoints on operations of the multiple-purpose projects. The coordination work group reported that the Corps would develop "channels for the expression of operational objectives by other agencies." MRD established a coordinating committee to ensure that all concerns were represented adequately in annual operating plans and then acted on if appropriate.¹²

Coordination as practiced by the Corps of Engineers went beyond the requirements of section I (a) of the 1944 Flood Control Act. The act provided that before any of the Chief of Engineers' plans, proposals, or reports for improvement works were submitted to Congress, the investigations were to be coordinated with each affected state and the reports submitted to such states for comment and recommendation. The Corps extended that policy concept to include participation in the formulation of operating plans for completed projects. Accordingly, the desires and views of the states were considered and complied with insofar as possible

and consistent with project authorizations. This coordination was to be accomplished through the Coordinating Committee on Missouri River Main Stem Reservoir Operations.¹³

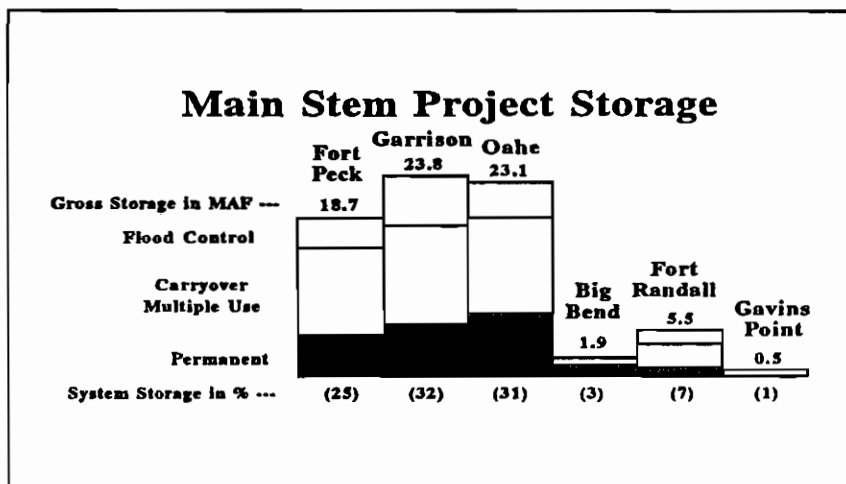
In December 1953, Sturgis's successor Brigadier General William E. Potter, explained MRD's functional operations control concept.¹⁴ He cited a team game as an analogy. Like members of a team, he said, each of the six main-stem dams and reservoirs had certain important functions to perform: "But to provide a winning combination which will give the people victory over floods and maximum benefits from use of controlled water, their functions must be fully coordinated."



Brig. Gen. William E. Potter.

Potter explained how the operational team evaluated the work to be performed. With the six main-stem reservoirs filled, the team had under its control a total main-stem storage capacity of 76.8 million acre feet (MAF), the largest storage for any system of reservoirs in the nation. (As of spring 1992, storage capacity of the main-stem system had been reduced from 76.8 to 73.7 MAF, or a 3.0 percent storage loss in 39 years.)¹⁵

The Missouri River Pick-Sloan system is unique because the ratio of



1991 CALENDAR YEAR RUNOFF FOR SELECTED REACHES

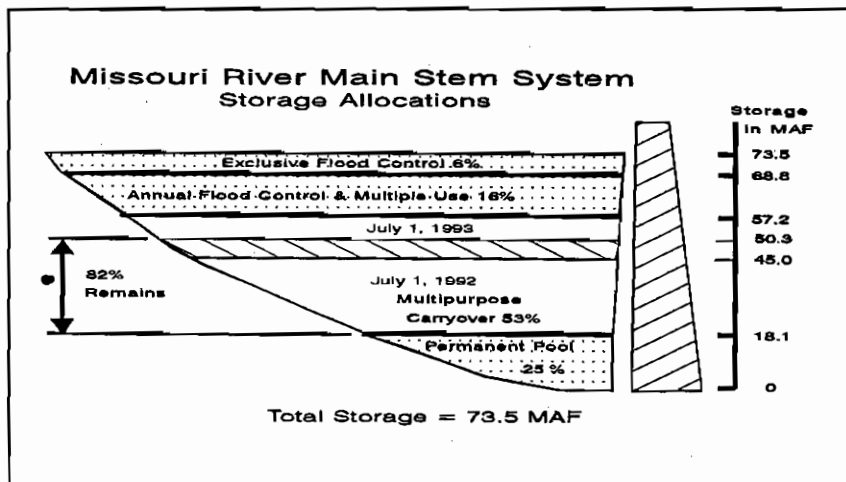
Reach	Runoff		
	1898-1987 Average Volume	Calendar Year 1991 Runoff-Volume (1,000 Acre-Feet)	Percent of Average Runoff
Above Ft. Peck	7,470	7,061	95
Ft. Peck to Garrison	11,080	9,677	87
Garrison to Oahe	2,350	1,833	78
Oahe to Ft. Randall	910	709	78
Ft. Randall to Gavins Point	1,510	2,149	142
Gavins Point to Sioux City	1,680	901	54
TOTAL ABOVE SIOUX CITY	25,000	22,330	89
Sioux City to Nebr. City	7,530 ^{1/}	5,800 ^{1/}	77
Nebr. City to Kansas City	11,930 ^{1/}	4,990 ^{1/}	42
Kansas City to Hermann	23,160 ^{1/}	15,160 ^{1/}	66
TOTAL BELOW SIOUX CITY	42,620	25,950	61

^{1/} Except for reaches from Sioux City to Hermann. Averages are taken from USGS Water-Data Reports for the period 1967-1987, adjusted to 1949 depletions.

storage to runoff is high. Total annual runoff upstream from Sioux City, Iowa, for the years of record 1898 to 1991 averaged nearly 25 MAF, or only about a third of the total storage capacity. All of that storage was not, of course, available for use. The system of reservoirs must be viewed as one in which water is stored in four separate storage zones.

A top zone consisting of about 4.6 MAF or 6 percent of capacity is reserved for the control of the most severe floods. This exclusive zone is evacuated as soon as possible, downstream flooding conditions being the only constraint in release scheduling. Flood control operation is not a use of water but absolutely requires that adequate storage space be available whenever needed to prevent downstream flooding. It is the only function the reservoirs serve that requires evacuated storage.

At the bottom of the reservoir system is a "permanent zone." This zone, which consists of 18.2 MAF or 25 percent of the total storage



capacity, is provided to assure minimum head required for power generation and sediment retention, and to allow for continued recreation and fish and wildlife purposes (although at greatly reduced benefits). Permanent pools in each of the reservoirs remain filled with an amount of water that is unavailable for flow regulation.

The largest storage area in the system is a multi-purpose carry-over zone. It contains 39 MAF or 53 percent of the total storage of the six reservoirs. The operations team's goal was to save the water in the multipurpose zone whenever possible so that it could continue to support all project functions during extended drought periods such as the 12-year drought of the 1930s. The operating rules contained in the Master Water Control Manual are defined so that as storage declines in this zone, less water is released.

During years of adequate water supply, the Corps prefers to operate in the next higher zone, the annual flood control and multiple-use zone. The Corps uses this zone to equitably support all authorized functions. The task is difficult at times because the zone consists of only about 11.7 MAF, or 16 percent of system storage capacity. Fortunately, water has never been allocated in the system to benefit specific project purposes. All purposes share the stored water, which enhances the operational team's flexibility in meeting demands.

Potter explained the operational concept in scheduling the retention or release of this water. The first consideration was flow requirements for water supply and public health as determined by the states and the U.S. Public Health Service. This was in accord with a unanimously adopted MBIAC resolution of 23 March 1950, which stated that operational

policy should recognize the need to protect the interests of public health and welfare east of the 98th meridian in the lower basin, just as section I (b) of the 1944 Flood Control Act protected the land area of the basin west of the 98th meridian.¹⁶

Potter stated that the next consideration in scheduling the release or retention of water from the main-stem reservoirs would be to satisfy requirements for irrigation.¹⁷ These decisions regarding water needed for irrigation at federally sponsored projects were to be made through data pooling by the affected states, MRD, and the Bureau of Reclamation. All authorized irrigation and other upstream beneficial consumptive uses were to be allowed for.

MISSOURI RIVER NAVIGATION FLOW TARGETS

<u>Target Location</u>	<u>Full Service</u>	<u>1989 Target</u>	<u>1990-92 Target</u> (Minimum Service)
Sioux City	31,000 cfs	28,000 cfs	25,000 cfs
Omaha	31,000 cfs	28,000 cfs	25,000 cfs
Nebraska City	37,000 cfs	34,000 cfs	31,000 cfs
Kansas City	41,000 cfs	38,000 cfs	35,000 cfs

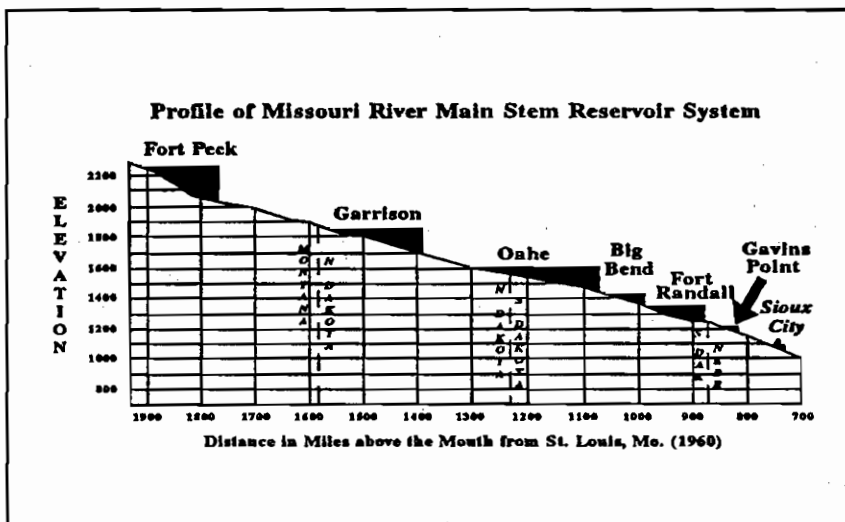
The remaining water supply was to be scheduled so that reservoir releases through the lower-most dam in the mainstem system supplied the seasonal requirements for navigation. Experience, and data collected in 1953, indicated that flows of 25,000 cubic feet per second at Sioux City, Iowa, and 35,000 cfs at Kansas City, Missouri, would permit a 9-foot-deep by 300-foot-wide navigation channel with little or no dredging. Later, the flow targets were increased to 31,000 and 41,000 cfs, respectively. The navigation channel extends 732 miles from Sioux City to the Missouri's confluence with the Mississippi River just above St. Louis.

The Missouri River is free flowing and has no locks and dams. The last flow-control point for the main-stem dams is at Gavins Point Dam, located 80 miles upstream from Sioux City. Flow support for navigation generally is limited to eight months, or almost the entire ice-free season. Season lengths are extended by ten days when excess water is available, but ice conditions do not permit longer extensions. Navigation tows generally work in the lower river prior to the scheduled opening dates if tributary flows are adequate to maintain the needed stages.

Flows of at least 9,000 cfs at Sioux City are required during the ice-free season (without commercial navigation) to permit cities and utilities to take water from the river. Actually, nonnavigation releases have varied from as much as 23,000 cfs, to evacuate excess water, down to 8,500 cfs during drought periods. During extreme rainstorms, releases have been reduced in the navigation season to only 6,000 cfs in order to minimize downstream flooding.

In his 1953 statement, Potter explained that all six main-stem dams and reservoirs were to be regulated internally and adjustments made in the outflow from the system to provide for the maximum generation of hydropower consistent with uses described above. Power plants at the dams on the Missouri River may use nearly all of the reservoir releases made for water supply and navigation. However, Potter envisioned that some special patterning of reservoir releases would be necessary to realize maximum power potentials. For example, when navigation flows are cut, power generation drops dramatically because the quantity of water being released from the four most downstream reservoirs is reduced. At the same time, releases from the upstream dams can be increased to generate more energy from previously stored water. In addition, Big Bend and Oahe releases are reduced in the fall period in order to reduce the storage in Lake Francis Case. Those project releases are increased in winter months to refill the evacuated storage in Lake Francis Case, thus further increasing winter energy production.

Internal system regulation is facilitated by the way the system receives water. Mountain snowmelt runoff flows into the two uppermost



reservoirs during May, June, and July. Characteristically, Fort Peck gets 32 percent of the total inflow into the system and it generates 11 percent of the hydropower the six dams produce. Garrison gets an additional 8 percent of the total inflow and generates 26 percent of the hydropower through the release of its incremental inflow plus the passing of Fort Peck's release. As the summer power load increases, water is released from these two upper-most reservoirs to maintain or raise the level of Oahe.

Natural runoff into Oahe is limited by plains snowmelt, which is generally low compared to mountain snowpack runoff and occurs during March and April. That inflow is supplemented by modest inflows from rainfall runoff. Oahe averages only 10 percent of total runoff into the main-stem system, but generates 28 percent of the power due to passing its local inflow plus the releases from upstream projects. Flows for navigation in the spring are supported primarily by Oahe; Fort Peck and Garrison releases are slowed. Those project releases are again slowed in the fall period, resulting in reduced levels at Oahe. The evacuated storage is refilled by the first of March to the base of the flood control pool, if possible.

These three upper-most reservoirs are large by all standards. In fact, Garrison, Oahe, and Fort Peck are the third, fourth, and fifth largest storage reservoirs in the United States. Only the Bureau of Reclamation's Glen Canyon and Hoover dams, forming Lake Powell and Lake Mead, store more water than does Garrison. The three reservoirs' total capacity constitutes 88 percent of the system's storage volume. Average annual releases from Fort Peck, Garrison, and Oahe are approximately 10,800, 24,100, and 26,600 cfs, respectively. Functioning as an integrated unit, these upper-most main-stem Corps projects provide operating flexibility and opportunities to maximize multi-purpose benefits.

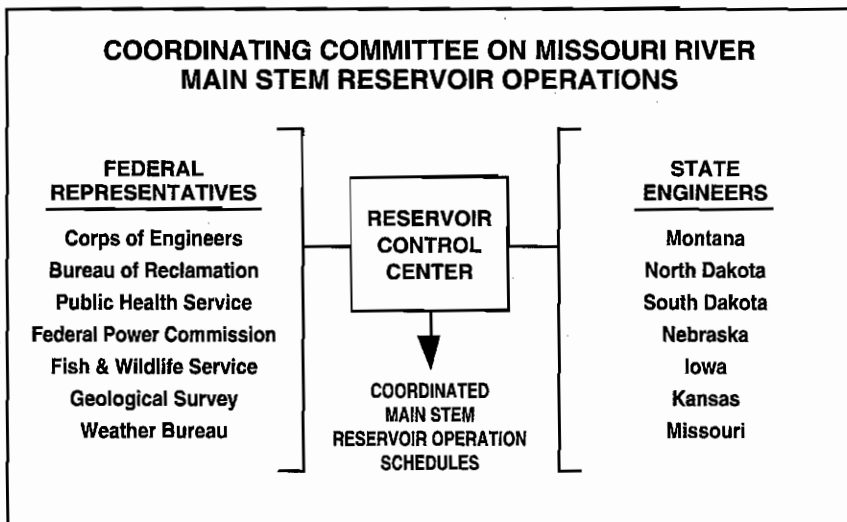
The three lower-most reservoirs are smaller. Big Bend, located downstream from Oahe, does not receive enough inflow to register a percent in the system total, but it does generate 10 percent of the system hydropower production due to the passing of upstream project releases. Fort Randall's incremental inflow is typically 4 percent of the total and it generates 18 percent of the hydropower. The lower-most dam and reservoir, Gavins Point, generally has 6 percent of the inflow and, due to a relatively low head, generates 7 percent of the system's normal annual power production of 10 billion kilowatt-hours.

Potter noted in his 1953 statement that operational objectives other than hydropower needed to be incorporated to the maximum extent practicable in operating policy. For example, he said that the interests of

fish and wildlife and recreation would receive "appropriate and important consideration." Federal and state fish and wildlife agencies would furnish data that the operating team might use in timing and establishing reservoir levels. Corps main-stem system operations would reflect these considerations insofar as practicable without serious interference with the primary authorized functions, Potter said.

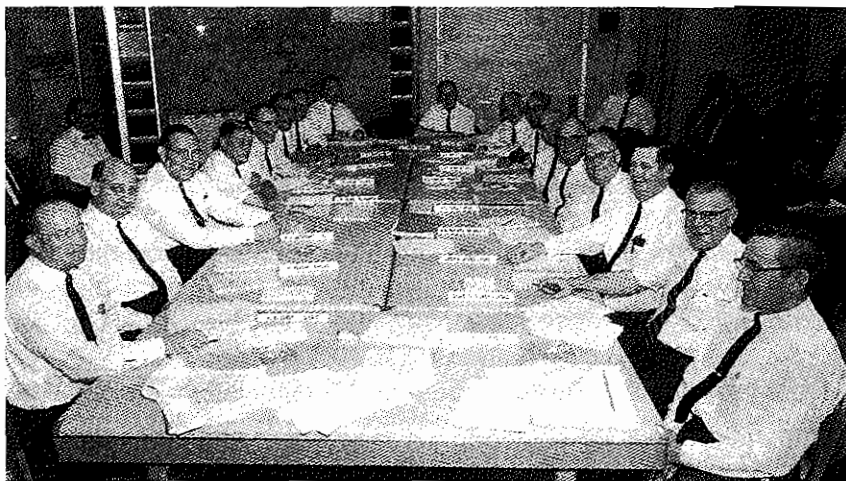
The Missouri River Main Stem Reservoir System Reservoir Regulation Manual, initially prepared in 1960, outlined the operating philosophy and described considerations for planning project operations. The Annual Operating Plan (AOP) provides the basis for the Corps of Engineers' placing the concepts of functional relationships and priorities into actual operations. Implementation procedures involve three main elements: (1) estimates of water supply to the reservoirs; (2) determinations of requirements for water supply to the reservoirs; and (3) monthly water schedules for storing and releasing water for optimum coordination of available supply with requirements. MRD's RCC prepares these schedules a year ahead of actual operations to provide adequate time for advance coordination among affected federal and state agencies and other public- and private-sector interests.

While the RCC has primary responsibility for this activity, many disciplines provide support. RCC professionals begin drafting the AOP soon after the first of August. They consolidate information obtained from many sources on various water requirements and develop preliminary reservoir operation water schedules that serve as a basis for coordination with federal, nonfederal, and private interests.



Beginning in 1953, when the Fort Randall project began operating and was combined with the Fort Peck project, federal agency representatives and state engineers assisted the RCC in assembling the information needed on the various operating requirements.¹⁸ This coordinating committee, established at the request of the MRD Division Engineer and chaired by the RCC chief, met in general conference twice a year to review, modify, and agree on the annual operating plan objectives. The committee was advisory only. Subsequently, the RCC executed the details of the AOP through daily interchanges with other interested parties.

These coordination arrangements and procedures were acceptable to most basin interests. However, reservoir operations were controversial as early as 1958, nearly a decade before the six main-stem reservoirs were filled to normal operating levels. Although procedural aspects were virtually unopposed, some interests being served by the multiple purposes of the main-stem system wanted changes in operating priorities.



Coordinating Committee.

On 29 April 1958, the Coordinating Committee on Missouri River Main Stem Reservoir Operations held a special public meeting to obtain the views of affected interests. About 110 persons attended, with 32 representatives of organizations presenting their views for the committee's consideration. Electric power cooperative spokespersons urged that power be given priority over navigation and that navigation releases be curtailed drastically or suspended, at least until the main-stem reservoir storage was filled to normal operating levels. They wanted the system operated for maximum production of year-round power sufficient to supply contract customers.¹⁹

Power-industry spokespersons stated that the O'Mahoney-Millikin amendment to the Flood Control Act of 1944 established a priority for power over navigation. A few witnesses suggested that power should be incidental to other functions. One witness also questioned the accuracy of the 1951 Report on Adequacy of Flows in the Missouri River and called for an immediate restudy. The Adequacy of Flows report, an inter-agency and state review and analysis of water supply published in 1951, concluded that the Missouri River's regulated water supply was adequate to provide for the multiple-purpose uses, taking into account that severe drought conditions would result in tolerable irrigation shortages on some tributaries and tolerable shortened navigation seasons.²⁰ The Coordinating Committee members representing the states and participating federal agencies concluded that such shortages should be tolerated to afford maximum use of the basin's water and land resources.²¹

The only substantial change in basic information and assumptions since the 1951 report was a considerably reduced estimate of future depletions of water supply for irrigation in the Missouri River above Sioux City. This information, provided by the Bureau of Reclamation, did not alter the conclusion that the Missouri River's water supply was adequate. Notwithstanding some minor changes in the original basic data assumptions, the Coordinating Committee concluded that a detailed restudy was not needed.

The O'Mahoney-Millikin amendment to the 1944 Flood Control Act and the Rivers and Harbors Act of 1945 did not specifically address the relative priority of hydroelectric power and navigation. This question was the focus of a special joint hearing in 1957 before the Committee on Interior and Insular Affairs and the Committee on Public Works of the U.S. Senate. The Chief of Engineers, in a letter to the chairman of the hearing, said that in his view the O'Mahoney-Millikin amendment did not establish any priority for power over navigation. He cited Senate Document 247 as stating that the Corps and Bureau of Reclamation recognized "the importance of the fullest development of the potential hydroelectric power in the basin consistent with other beneficial uses of water."²²

The Coordinating Committee agreed with the Chief's conclusion. The committee reported that "any blanket proposal for maximum service to any function by elimination or inequitable reduction in service to any other primary function" was incompatible with the authorizing legislation.²³ Actually, operations for navigation and power release are quite compatible. A Corps official stated that if navigation was not supported, the annual water supply could be adjusted between the reservoirs to

generate more power during the summer and winter when its value would be greater. Likewise, not supporting power would require some seasonal operationing adjustments. Reservoir operations would undergo few changes if either navigation or hydropower production were eliminated.²⁴

The Coordinating Committee responded to witnesses who requested that reservoirs be filled and stabilized for recreation and other local uses. It concluded that the primary authorizations were for flood control, irrigation, navigation, and hydropower and that reservoir water levels must fluctuate in order for the projects to function effectively for these purposes. The committee stated that even in normal years water levels in the Fort Peck, Garrison and Fort Randall reservoirs might fluctuate as much as 10 to 15 feet in a few months, therefore making it "impractical to consistently maintain the reservoirs at levels that will completely satisfy many recreationists."²⁵

In addressing and clarifying these issues, the Coordinating Committee performed an important public service. Correspondingly, it served the basin in facilitating establishment of operating schedules in accord with the original basic concept of multiple-purpose development and use of surface-water resources. Unfortunately, the Coordinating Committee came within the purview of the Federal Advisory Committee Act (P.L. 92-463). The committee was dissolved in late 1981 rather than complying with the requirements needed in order to continue.²⁶

In January 1982, MRD announced its alternative policy approach to the demise of the Coordinating Committee. To perpetuate the committee's functions as much as possible without violating the intent of the Advisory Committee act, MRD would hold semiannual public meetings to discuss basin water-management concerns.²⁷ At the spring meeting, operational objectives would be outlined for further consideration in drafting the next Annual Operating Plan. Then at the fall meeting, the tentative operating schedules prepared in the interim by the RCC were to be reviewed and revised for use as the basis for actual operations and a draft plan presented for the upcoming year.

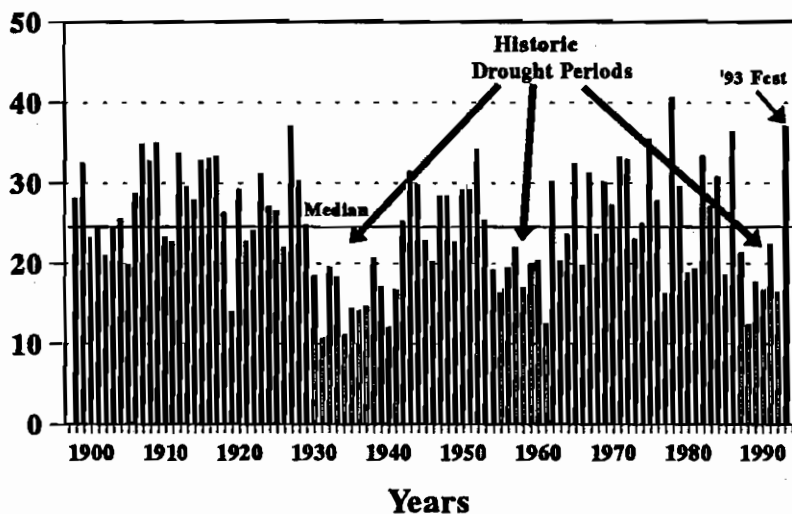
Operational considerations presented at the semiannual meetings did not generate much discussion in the first years. However, the variable climate in the vast basin put stress on the system. Floods followed by droughts greatly increased the involvement by those relying on the Missouri River and its reservoirs for business and pleasure.

Even under the best of runoff conditions and reservoir elevations, multi-purpose functions served by the main-stem dams and reservoirs are sometimes in competition. For example, regulation for flood control may cause users immediately downstream from a project to have lower than

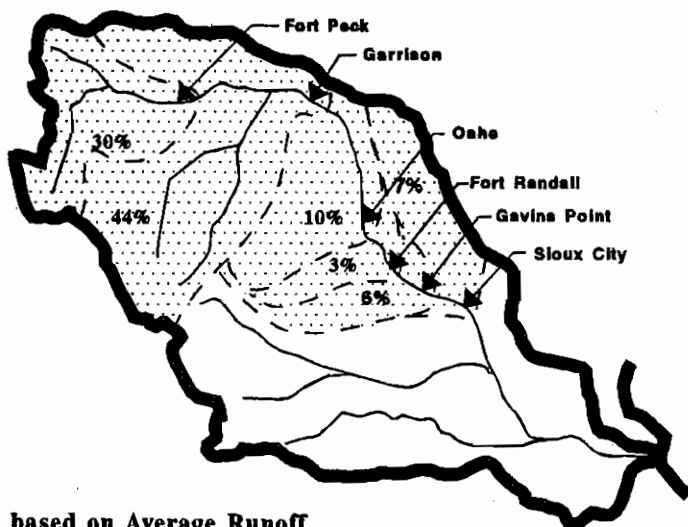
Annual Runoff at Sioux City, Iowa

Adjusted to 1949 Level of Depletions

Million Acre-Feet



Missouri Basin Runoff by River Reach



normal flows that affect power generation, recreation, and fish and wildlife. Fluctuating reservoir levels due to droughts and floods affect irrigation and recreation interests, who prefer a relatively constant pool.

These and other issues exist for the RCC throughout the river reaches of the Missouri. Releases must be regulated for water uses on open river in reaches other than below Gavins Point. There are approximately 200 miles of open river below Fort Peck, 100 miles below Garrison, and 50 miles below Fort Randall. And during the 1980s, a growing array of organized interests began formally expressing their concerns about the effects of reservoir regulation.

Impacts on dam and reservoir operations caused by varied climatic conditions across the Missouri River basin served as a catalyst for controversy. Runoff records dating from 1898 illustrate a part of the problem for reservoir regulation. While 1977 was dry, runoff was not as low as the record of only 10.7 MAF in 1931. The year 1978 had a record runoff of 40.7 MAF. Both 1981 and 1982 were drought years, but 1983 had the third largest runoff on record.

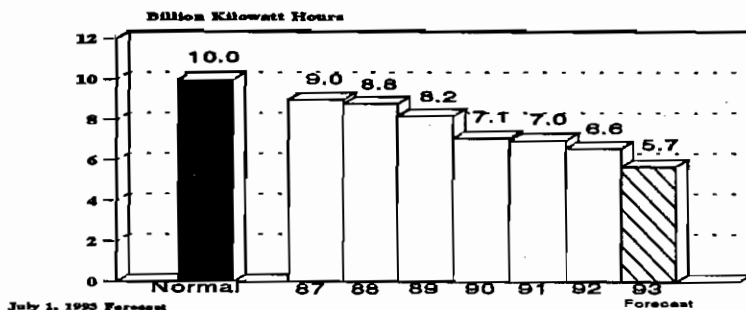
These runoff extremes may be exacerbated by simultaneous conditions within the basin, such as drought in one subarea and high rainfall in another. For example, during 1986, the five-month runoff in the reach from Garrison to Gavins Point was the maximum for the period of record and record flooding occurred in the lower Missouri basin. At the same time, the upper basin was extremely mild and dry.²⁸

The main-stem system inflows for March 1987 were 165 percent of normal due to a heavy and accelerated plains snowmelt. System regulation provided the largest flow reduction since construction of the dams and prevented massive damage from Bismarck, North Dakota, to St. Louis, Missouri. Conditions in the upper reaches of the system contrasted sharply with those in the lower reaches. Because mountain snowpack and summer rainfall were well below normal for the winter of 1986-1987, runoff for the year was below normal.

These conditions and voices of dissent were a portent of the future. Following the record high-water stages experienced in the lower basin in 1986, the Riparian Association contended that the flood control reserve was inadequate. The Corps of Engineers was willing to evaluate the effects of increasing flood control storage in the main-stem reservoirs, but noted that more space given to flood control would result in lower power heads and less hydropower generation.²⁹

The Missouri Basin Systems Group (MBSG), representing some 200 rural and small municipal electric utilities, would oppose the Riparian Association's request. Members of the MBSG purchased 71 percent of

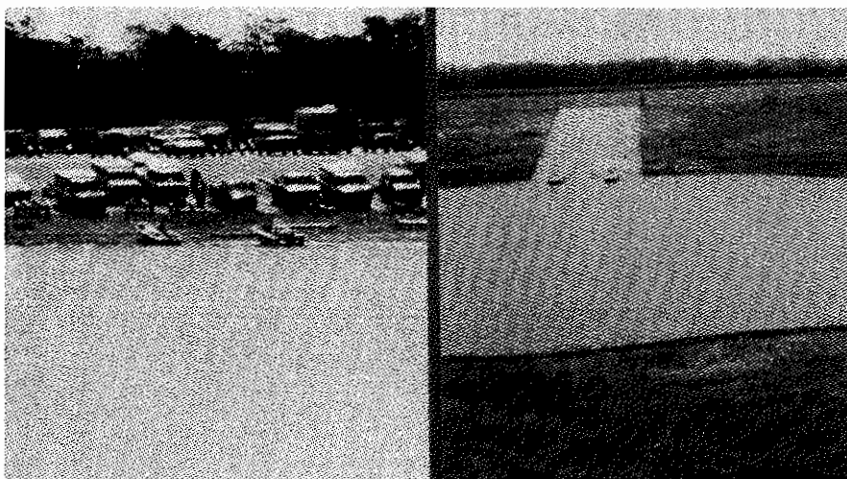
Main Stem System Generation



the hydropower produced by the main-stem system in 1986 and committed under firm power contracts. A change in system operations would threaten those firm commitments, disrupt funding arrangements for local governments and institutions, and alter the Pick-Sloan project plan budgets. Annual power generation averages approximately 10 billion kilowatt-hours with revenues ranging from \$75 million to \$100 million a year, depending on water and marketing conditions.

The reservoir control team had requests from state and federal fisheries interests that were also in conflict with the Riparian Association. Since 1968, Nebraska, South Dakota, North Dakota, and Montana fisheries personnel had coordinated their fisheries management recommendations to the RCC through the Upper Missouri River Chapter of the American Fisheries Society.³⁰ The Corps urged (1) the formation of a Natural Resources Committee to facilitate handling various states' requests and (2) expansion of the committee's scope to include wildlife enhancement (this involvement to be coordinated through the U.S. Fish and Wildlife Service).

The RCC sometimes had difficulty implementing the recommendations of the fisheries interests. For example, Oahe received record inflows during the spring of 1986 and the pool elevation soared to a record high (which was to be broken in 1987). Fisheries interests wanted the pool held at least ten feet lower. They preferred that the Corps draw a reservoir down and hold it down for one or more years to establish vegetation along the shoreline. Then, when flooded in succeeding years, the vegetation would provide spawning habitat and nutrients. The problem is the



Lake Oahe — June 1987 at 1613' and April 1991 at 1588'.

uncontrolled rise from inflows and balancing the system through the natural cycle.

Sometimes the RCC simply has too little water to meet competing demands. In 1987, annual water supply was lower than expected 90 percent of the time, based on the entire period of record since 1898. The fall of 1987 was extremely dry and warm, and winter mountain and plains snowpack was far below normal. The subsequent summer was one of the hottest and driest on record. In the fall of 1988, reservoir storage was the lowest in the 22-year period since the system first reached normal operating level and was entering the second cycle of a 2-year drought.

The drought of 1981-1982 was broken with excellent inflows. Nature was not as kind in the case of a later drought. Colonel George LaBlonde of the Missouri River Division opened the 1988 fall public meeting by stating that "This year we are dealing with a devastating drought."³¹

The basin main-stem system would experience an extensive dry period. (Other such periods were the 12-year drought of the 1930s and an 8-year drought during the 1950s.) By late 1991, the RCC reported that runoff for the Missouri River above Sioux City had been "significantly below normal for each of the past five years."³²

The drought's effects were numerous and varied, and basin residents would probably feel them for years to come. The Upper Missouri Basin Governors' Association expressed concern in August 1989 that the recreation industry, domestic water supplies, and riverine irrigation were threatened. Fisheries resources in Montana, North Dakota, and South Dakota were threatened and the governors were concerned about recov-

MISSOURI RIVER POWERPLANTS

<u>COAL FIRED</u>	<u>MW</u>
Neal North	935
Neal South	600
OPPD — No. Omaha	600
Council Bluffs Energy Center	845
OPPD — Neb. City	550
St. Joseph — Lake Road	100
KCPL — Iatan	700
Nearman Creek Power	256
KCP&L — Grand Ave.	peaking
KCP&L Hawthorne	909
Indep. Power — Mo. City	peaking
Sibley Power	514
Quindaro Power	229
Chamois Power	71
Labadie Power	2400

NUCLEAR

OPPD — Ft. Calhoun Nuclear	500
NPPD — Cooper Nuclear	800
Callaway Nuclear	1240

ery. Resort operators and the public had experienced loss of boating access and protected marinas. Hydropower production was reduced substantially and the governors feared that power generation would not return to normal for "several years."³³

Lower basin users of the Missouri River were also hurt by the drought. Below Gavins Point, 15 coal-fired and 3 nuclear power plants, generating approximately 11,150 megawatts of electric energy, rely on the Missouri River for cooling water. A users group of 15 member utilities relies on the lower river for public water supply to some four million people. These interests expressed concern that the Corps policy of reducing releases from the main-stem system in order to conserve water might interrupt their delivery of vital services.³⁴

The Corps adopted a policy of releases from Gavins Point of 10,500 cfs and below during winter months. Some water supply intakes, which are fixed structures, were at elevations above river stages. When icing



Water Supply Intake.

conditions in the river blocked flow, the facilities were shut down. For example, St. Joseph, Missouri, was without water for three days in February of 1989. Summertime flows during 1988 and 1989 were insufficient to bring temperatures within a comfortably safe operating range, according to industry spokespersons.

The public water supply and electric energy representatives stressed to the Corps the necessity of maintaining releases that would provide river stages adequate for their water withdrawal facilities. For the health and safety of millions of people, their industries must supply uninterrupted services that depend on Missouri River water. Through industry spokespersons and elected representatives, they declared that maintenance of minimum flows for public water supply must be the highest priority issue in the main stem. The Public Water Supplies Association petitioned the Corps for minimum releases of 15,000 cfs at Gavins Point.³⁵

Missouri River water supply users were willing to take measures to enhance their ability to draw water from the river during low flows. However, modifying the fixed structures to operate with lower river stages than those contemplated in the original design required large capital expenditures and complex, time-consuming engineering and construction. Until they could modify their intakes, the water users wanted the Corps to provide relief through additional releases.

The basic problem for these users was that river channelization has caused the stream bed to degrade. Prior to construction of the main-stem dams and stabilization of the downstream channel, the Missouri River

carried over 150 million tons of sediment annually, much of which is now captured by reservoirs behind the main-stem dams. Without the heavy sediment load, the water has scoured out and lowered the river bed.³⁶

A flow of 12,500 cfs occurs at a lower surface elevation than that prior to the Pick-Sloan project period, when many water intakes were built. Intake designs were based on historic river conditions with pump requirements and locations determined by known high- and low-water stages. Degradation has affected the original design specifications. With low flows in the downstream reaches during 1988 and 1989, many suction lifts were in excess of the maximum design of the facilities' pumps.

The Corps had considerable difficulty conserving water during the drought period. The RCC had set a release rate that was commensurate with the runoff rate, about 75 percent of normal. As of 1 October 1991, after four years of drought, more than 38 percent of the water in the carryover multi-purpose zone had been used.³⁷ (During drought conditions, releases are reduced in proportion to the level of water storage in the carryover multiple-use zone.) Since the system filled in 1967, the average annual release from Gavins Point has been 29,400 cfs. In 1989, the average annual release was 23,000 cfs, and in 1990 and 1991 between 20,000 and 21,000 cfs.

The water resulting from the releases was not sufficient for the water users along the lower river who withdrew water through intakes or who were barge and marina operators. The average tow on the Missouri River consists of six barges at full-service flows, which are represented by 31,000 cfs at Sioux City and 41,000 at Kansas City. The Corps had provided releases of 3,000 cfs below full service during 1989 and 6,000 cfs in 1990. As a result, the seasons opened one week late and closed four weeks early.

These water conservation measures had a number of negative impacts on the navigation industry. Tow operators had to reduce their loads to a maximum draft of 7.5 feet, representing at least 16 percent less carrying capacity than in a normal year. Risks of groundings increased, and trip times had to be lengthened. The American Commercial Barge Lines, which had maintained five or six vessels on the Missouri River, reduced operations about 60 percent by the fall of 1990.³⁸ Commercial tonnage dropped from a peak of 3.3 million tons in 1977 to a 1990 estimate of only 1.4 million tons.³⁹

Tow operators had trouble navigating even in the opening weeks of the 1990 season. Commercial marinas had to shut down or dredge. In 1988 and 1989, the Corps dredged the lower river reaches in order to

MISSOURI RIVER COMMERCIAL NAVIGATION TONNAGE AND SEASON LENGTH

Year	Scheduled Length of Season (Months)	Commercial Shipments (tons) (1)	Total Shipments (Tons) (2)	Traffic (1000 Ton-Miles) (1)
1954	7-3/4	297,149		
1955	7	435,455		186,291
1956	7	319,076		132,614
1957	6	273,895		99,710
1958	7	596,116		242,986
1959	7	842,812		380,475
1960	7-3/4	1,440,985	6,948,875	686,412
1961	6-1/2	1,565,736	6,187,381	718,597
1962	8	2,206,680	8,468,705	989,414
1963	8	2,316,066	7,978,002	1,002,745
1964	8	2,549,795	7,633,415	1,126,958
1965	8	2,270,789	7,725,898	1,013,944
1966	8	2,562,867	7,948,179	1,193,112
1967 (3)	8	2,562,657	6,659,219	1,179,235
1968	8 (4)	2,254,489	6,724,562	1,047,935
1969	8 (4)	2,123,152	7,001,107	1,053,856
1970	8 (5)	2,462,935	7,519,251	1,190,232
1971	8 (4)	2,791,929	7,483,708	1,329,899
1972	8 (4)	2,665,579	7,182,841	1,280,385
1973	8	1,817,471	6,370,838	844,406
1974	8	2,576,018	7,673,084	1,227,525
1975	8 (4)	2,317,321	6,208,426	1,105,811
1976	8 (4)	3,111,376	6,552,949	1,535,912
1977	8	3,335,780	6,734,850	1,596,284
1978	8 (4)	3,202,822	7,929,184	1,528,614
1979	8 (4)	3,145,902	7,684,738	1,518,549
1980	8	2,909,279	5,914,775	1,335,309
1981	7-1/4 (6)	2,466,619	5,251,952	1,130,787
1982	8 (4)	2,513,166	4,880,527	1,131,249
1983	8 (4)	2,925,384	6,301,465	1,300,000
1984	8 (4)	2,878,720	6,386,205	1,338,939
1985	8 (4)	2,606,461	6,471,418	1,201,854
1986	8 (7)	2,343,899	6,990,778	1,044,299
1987	8	2,405,212	6,735,968	1,057,526
1988	7-1/2	2,156,387	6,680,878	949,356
1989	6-3/4	1,906,508	5,352,282	796,799
1990	6-3/4	1,329,000	5,841,000	
1991	6-3/4	1,500,000 (8)		
1992	6-3/4	1,200,000 (8)		

- (1) Tonnage figures from Waterborne Commerce of the United States except for the years 1954-1959 which were provided by the Kansas City District Corps of Engineers.
- (2) Includes commercial commodities; sand, gravel and crushed rock; and waterway improvement materials. Total shipment figures provided by Waterborne Commerce were not available prior to 1960.
- (3) Main stem reservoir system reached normal operating storage level in 1967.
- (4) 10-day extension of season provided.
- (5) 10-day extension and 10-day early opening provided.
- (6) Full service flows for shortened season in preference to reduced service.
- (7) 10-day extension provided for 1985 season in trade for 10-day delayed support of 1986 season.
- (8) Preliminary numbers not final — will be changed.

maintain the minimum navigation channel. And, compounding the problems with commercial navigation, the Corps missed target flows by as much as 6,000 cfs. One discouraged barge industry spokesperson said that "at 25,000 cfs there is no release for navigation" anyway.⁴⁰

At the same meeting at which navigation spokespersons and lower basin water users requested the Corps to release more water from the reservoir system, upper basin interests represented the opposite position. A South Dakota official said the state had "repeatedly stated the need" to maintain stable levels in the main-stem reservoirs "for fisheries, recreation, water supply intakes, and other purposes." Upper basin state representatives wanted the Corps to further curtail the length of the navigation season and to adopt operating plans that "more evenly distributed" the effects of drought between the upper and lower basin states.⁴¹

In developing the operating plans for 1991 and 1992, during the fifth year of drought, the Corps broadened its integrative process for drafting the AOP. Previously, the draft AOP provided the first opportunity for review of Corps recommendations. The Missouri Basin States Association appointed a technical committee to work with the Corps staff, analyze an array of factors, consider various operations proposals, and develop recommendations for the draft AOP.⁴²

During their meeting in August 1991, the MBSA directors recommended an operating scenario for the Corps' use in drafting the 1991-1992 AOP. They did not reach consensus on the plan; some of the upstream states held it did not go far enough to help recover system storage. The directors agreed, however, that the new process improved the way the AOP was developed.

In addition to expanded state participation, the Corps extended public involvement by holding four meetings in the fall of 1991, instead of the usual one public meeting. The meetings were headed by the Assistant Secretary of the Army for Civil Works, accompanied by her executive and a senior staff member of the Corps' Washington, D.C., headquarters water-management office. After review and discussion, the various operating schedules were submitted to the MRD Division Engineer for adoption. The plan then became the framework within which the RCC would schedule detailed daily operations throughout the following year.

Full public participation is needed in order to make the RCC process work well. All parties must strive to achieve "good" public policy characterized by an integrative process that transcends self-interest. As the recent history of Missouri River main-stem operations clearly shows, there are limits on how many interests can be satisfied with the substantive results of any one decision. Since system operations began, Corps



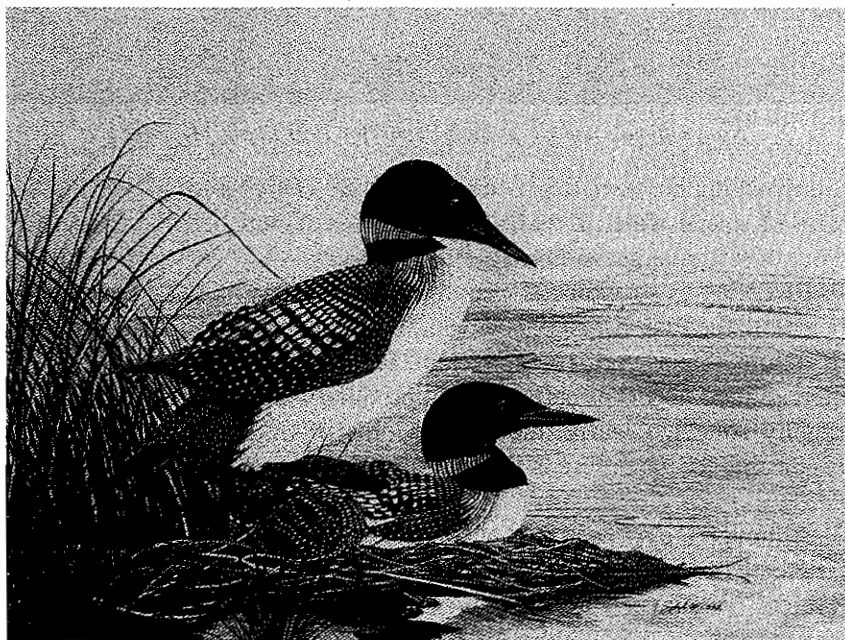
Army Officials and Corps Staff Depart for 1991 Public Meetings.

policymaking has been exposed to full public view. However, during the years of scarce water, a wider array of interests has become concerned about operational decisions.

Resulting frustration and resentment were based more on disappointment with the Pick-Sloan plan developments than with the conduct of the operations. Real-world outcomes of Pick-Sloan favored lower basin interests, and no Corps actions could produce what upper basin interests actually sought. Clearly, the Army Corps of Engineers is in no way responsible for the failure of the Bureau of Reclamation's basin irrigation plan.

Although the Army's Pick plan has been implemented successfully, it has created for the Corps what Lawrence Lynn called Murphy's Law of Politics: "Whatever you did, you should have done something else." In private, virtually every interest in the basin acknowledges that the RCC is performing efficiently and effectively. But when the original policy idea does not equate with the real-world outcome, operations decisions are subject to criticism by special interests.

Drought conditions in the 1980s deepened the resentment upper basin interests had against the lower basin beneficiaries and the Corps of Engineers. While processes for operations decisionmaking were being improved, upper basin resentment intensified because the "losers" thought their interests were being subverted to those of the lower basin "winners." Unable to achieve a basinwide consensus for their demands that the Corps make operations changes, and recognizing that they could not solve their problems through congressional legislation, upper basin states resorted to the courts.



Loons by Sallie Zydek.